Kidde Fire Protection
A UTC Fire & Security Company

SIRIUS II

2, 4 & 8 ZONE CONVENTIONAL FIRE ALARM CONTROL PANEL

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

TM0110

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CHAPTER 1

DESCRIPTION

1.1 GENERAL DESCRIPTION

Sirius II is a conventional fire alarm control panel designed to EN54 Parts 2 & 4. The Sirius II range comprises 2, 4 and 8 zone versions. An 8 zone panel is shown in Figure 1.

The panel is housed in a metal enclosure and contains a main motherboard which is provided with a DC supply from a power supply unit (PSU). The PSU is powered from AC mains and two 12 V, 7 Ah lead acid batteries (wired in series) are used for the secondary supply source if the mains supply fails. Each zone provided by the panel is monitored for faults. The panel provides two standard conventional alarm circuits.

The display panel provides the visual indications and user controls.

Figure 1: 8 Zone Sirius II Fire Alarm Panel

1.2 DISPLAY PANEL

All indications and controls are available via the Sirius II display panel (Figure 2). This incorporates a two line by 16 character liquid crystal display with back light and this indicates panel fire and fault conditions and user and engineer menus when accessed.

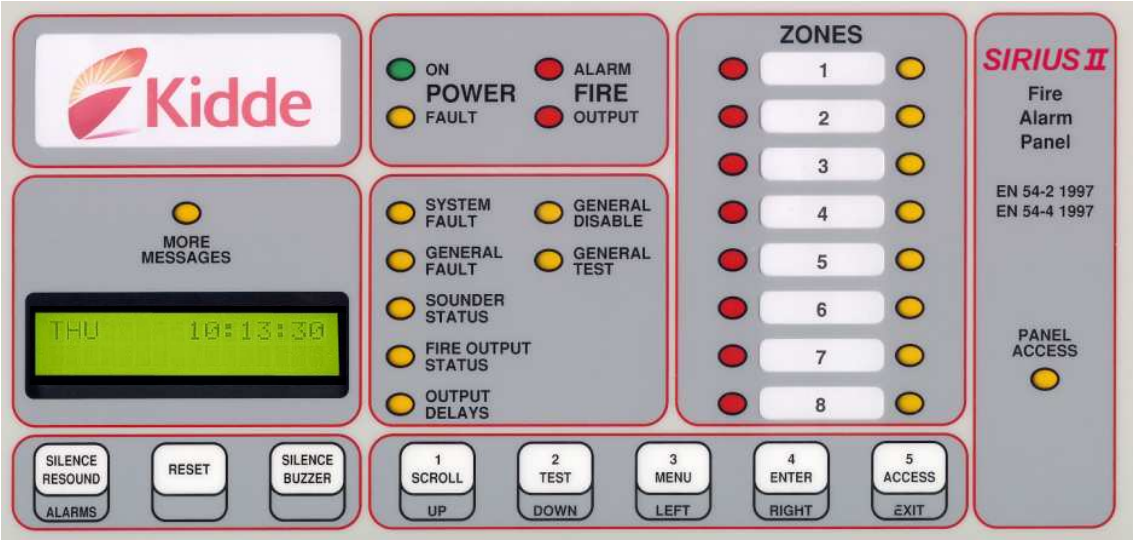

Figure 2: Sirius II Display Panel

1.3 INDICATORS

The following indicators are provided on the panel display:

POWER ON	The green POWER ON light comes on if primary power (AC mains) or secondary power (batteries) provide power to the panel.
POWER FAULT	The yellow POWER FAULT light flashes 1 second on 1 second off if a fault occurs with the panel internal mains or battery power supply.
SYSTEM FAULT	The yellow SYSTEM FAULT light comes on if the panel has a system fault condition (software or hardware).
GENERAL FAULT	The yellow COMMON FAULT light flashes 1 second on 1 second off if any panel fault condition occurs.
SOUNDER STATUS	The yellow SOUNDER STATUS light flashes 1 second on 1 second off if an alarm circuit fault occurs. If the alarm circuits have been disabled, this light will be steady on.
FIRE OUTPUT STATUS	The yellow FIRE OUTPUT STATUS light flashes 1 second on 1 second off if a fault occurs on the fire output or will be steady on if the fire output is disabled.
OUTPUT DELAYS	The yellow OUTPUT DELAYS light flashes 1 second on 1 second off when panel alarm circuits and fire outputs are active but delayed in operation, remains steady when output delays are enabled and goes off if delays are disabled.

FIRE ALARM	The red FIRE ALARM light comes on when any zone is in a fire alarm condition. This light flashes 1 second on 1 second off when a new zone fire alarm event occurs and is constant when accepted by operation of the silence/resound sounders switch. Operation of the panel reset switch turns this light off only if the alarm condition is removed.
FIRE OUTPUT	The red FIRE OUTPUT light comes on when the monitored and non monitored fire outputs are active.
GENERAL DISABLE	The yellow GENERAL DISABLE light comes on if any zone monitoring circuit, alarm circuit, fire output or output delays are disabled.
GENERAL TEST	The yellow GENERAL TEST light comes on if the panel has one or more zones in test mode.
MORE MESSAGES	The yellow MORE MESSAGES light comes on if there are more than 2 messages available on the display.
ZONE FIRE	The red ZONE fire light comes on if there is a fire on a specific zone.
ZONE FAULT	The yellow ZONE fault light flashes 1 second on 1 second off on a zone fault condition, flashes 0.5 second on, 0.5 second off if a zone is in test or is steady on if a zone is disabled.
PANEL ACCESS	The yellow PANEL ACCESS light comes on if the panel is in access level 2 and flashes 1 second on 1 second of when the panel is in access level 3.

1.4 CONTROLS

The four access levels to the panel's controls are shown in Table 1.

Access Level	Operating Level	PANEL ACCESS Light	Time Out	Pass Code
1	Normal operation	Off	N/A	N/A
2	User	On constantly	N/A	7179
3	Engineer	Flashing (1 second on/off)	30 seconds	7134
4	Engineer (counter clear)	Flashing (1 second on/off)	N/A	N/A

Table 1: Access Levels

Access Level 1 is the normal operating condition, where, with no zones disabled, the green POWER ON light is on and all other lights are off. The TEST button, which is used to test all of the lights in the panel display, is operative. The SILENCE BUZZER button is active, but only for faults and not for alarm conditions. All other controls are inoperative and are only available in Access Level 2.

The panel control switches sound the panel internal buzzer when operated. If any of these switches are operated for more than 10 seconds or are stuck in the on position, the panel indicates a fault condition, SYSTEM FAULT light flashes 1 second on 1 second off, the internal panel buzzer sounds intermittently and the fault output is active.

The following controls are available in Access Level 2:

SILENCE / RESOUND ALARMS	If the panel has a zone fire state, operation of the SILENCE / RESOUND ALARMS switch silences all alarm devices, ALARM and ZONE fire lights stop flashing and stay on constantly and the buzzer sounds intermittently. If a new zone alarm condition occurs, the fire state conditions are re-enabled. Repeat operations of the switch toggles the panel between re-sounding and silencing of the external alarms and the panel buzzer.
RESET	If the panel has standing faults on the display, operation of the RESET switch clears these faults. If the panel has any standing alarm conditions, the SILENCE RESOUND ALARMS switch MUST be operated first to enable the RESET switch. System reset forces the panel into a quiescent state. If standing panel alarms or faults remain, after a short delay they will be re-enabled. **NOTE**: **After operation of the RESET switch the panel has a delay of about 5 seconds before any other switch can be activated (except test lamps).**
SILENCE BUZZER	If there is an alarm, panel access must be enabled for operation of this switch. If the panel internal buzzer is sounding, operation of the SILENCE BUZZER switch silences the panel buzzer. Any new event resounds the buzzer and operation of the switch is again required to silence it.
SCROLL	Operation of the SCROLL switch when more than 2 panel events are active, updates line 1 of the display with the next event in the queue. Line 1 reverts back to the first panel event if this switch is not pressed within 10 seconds.
TEST	This switch is always active. Operation of the switch makes all display lights come on and also sounds the panel buzzer continuously.
MENU	Operation of the MENU switch allows the user to select panel operator functions and engineer functions. To enable panel engineer functions the user must initially enter the 4 digit engineer code (refer to Table 1).
ENTER	The ENTER switch is used to accept user and engineer function configuration changes.
ACCESS	The ACCESS switch allows the operator to input the 4 digit code to allow panel access. When the panel is accessed the PANEL ACCESS light comes on, all key switches are enabled and operator access functions can be selected.
PANEL EDITING SWITCHES	When the operator selects an access function or engineer function, several operator switches can be used for editing: • The MORE MESSAGES switch is also used for switch 1 and switch UP. • The TEST DISPLAY switch is also used for switch 2 and switch DOWN. • The MENU switch is also used for switch 3 and switch LEFT. • The ENTER switch is also used for switch 4 and switch RIGHT. • The ACCESS switch is also used for switch 5 and switch EXIT.

1.5 EN 54 OPTIONAL FUNCTIONS WITH REQUIREMENTS

The panel has the following optional functions:

- Output to fire alarm devices.
- Output to fire alarm routing equipment.
- Delays to outputs.
- Coincidence detection.
- Alarm counter.
- Test condition.
- Two sounder circuits.

1.6 ANCILLARY FUNCTIONS NOT REQUIRED BY EN54

- Auxiliary change over contacts:
  - -One change over contact operating on any fire condition.
  - -One change over contact operating on any fault condition.
- One auxiliary power supply output.
- One monitored remote input for sounder circuit test.
- Total loss of the power supply.

1.7 INTERNAL LINKS

The internal links are shown in Table 2.

Link Ref.	Function	Option
LK1	Earth fault monitoring.	With the link made, the panel provides monitoring for earth faults on external wiring.
LK2	Disable internal buzzer.	Removing the link disables the internal buzzer.
LK3	Repeater end of line resistor.	The link should be made if the panel is to be connected to repeaters. The link is not fitted on 2 zone panels.
LK4	Option cards end of line resistor.	The link should be made if any of the option cards are to be installed in the panel. The link is not fitted on 2 zone panels.
CN3	Alarm counter clear	Temporarily making this link clears the alarm counter to zero.

Table 2: Internal Links

CHAPTER 2

OPERATION

2.1 GENERAL

Under normal operating conditions, the green **POWER ON** light is on and the zone window lights are off.

When a fire condition is detected, the applicable red zone fire light flashes, the red **ALARM** light flashes, the red **FIRE OUTPUT** light comes on, the alarm sounder circuits are activated (unless programmed off) and the buzzer on the panel sounds continuously.

If a fire indication shows in one or more zones and after the appropriate fire drill has been completed, to silence the alarms:

- enter Level 2 (the yellow **ACCESS** light comes on).
- operate the **SILENCE RESOUND ALARMS** switch (the audible buzzer sounds intermittently, the
- zone light, the **FIRE OUTPUT** light and the **ALARM** light stay on. The audible alarm circuits go off and the fire output circuit remains active.)

When all zone fire conditions have been rectified, operate the **SYSTEM RESET** switch, (the panel reverts to Level 1). If the fire condition still exists, the panel reverts to the alarm condition. To reset the panel it may be necessary to clear smoke or heat from the detectors and to replace the glass in the manual fire call point.

If a fault occurs, the applicable yellow zone fault light flashes, the applicable yellow **SYSTEM FAULT, COMMON FAULT** or **SOUNDER FAULT** light flashes and the buzzer on the panel sounds intermittently (one second on, three seconds off).

When in Access Level 2, all other panel operator functions can be accessed when the **MENU** and then **UP** or **DOWN** switches are operated, ie:

- TIME / DATE
- DAY / NIGHT MODE
- DISABLEMENTS
- VIEW

2.2 TIME / DATE

This function allows the operator to enter a new date and time. In panel quiescent condition the day and time are displayed on line 1 of the display. When a panel zone alarm condition occurs, the time is displayed with the zone in alarm message. Panel Night to Day delay mode of operation relies on the time for switch-over. To exit the time/date function at any time press the **EXIT** switch, or do not operate any switch for 30 seconds.

2.3 DAY / NIGHT MODE

This function allows the operator to turn the Day / Night panel mode of operation (see page 18) on or off. When enabled, this delays the operation of the panel alarms and fire outputs when zone fire alarm events occur in the day. If enabled the **OUTPUT DELAYS** light is on.

2.4 DISABLEMENTS

The disablement function allows the operator to disable several panel functions.

The ZONE DISABLEMENT function allows the user to enable/disable one or more zone monitoring circuits. If a zone monitoring circuit is disabled, the panel ignores that zone's fire, short circuit fault, open circuit fault or head removed fault conditions. The disabled zone does not affect any of the other zone monitoring circuits. In the quiescent state, a disabled zone is indicated by the **ZONE** fault light on and the **GENERAL DISABLE** light on.

The ALARM DISABLEMENT function allows the user to enable/disable the panel alarm circuits. This inhibits the panel fire alarm devices from operation when an alarm condition occurs. It also inhibits the panel from monitoring for an open or short circuit fault condition. In the quiescent state, the alarm disablement condition is indicated by the **SOUNDER STATUS** fault light on and the **GENERAL DISABLE** light on.

The FIRE DISABLEMENT function allows the user to enable/disable the panel fire output. This inhibits the fire outputs from operation when any panel zone fire alarm condition occurs. It also inhibits the panel from monitoring for a fire output open or short circuit fault condition. In the quiescent state, the fire output disablement condition is indicated by the **FIRE OUTPUT STATUS** light on and the **GENERAL DISABLE** light on.

2.5 VIEW

The view function allows the user to view the total amount of panel alarms registered.

The Access Level 2 menu structure is summarised in Figure 3:

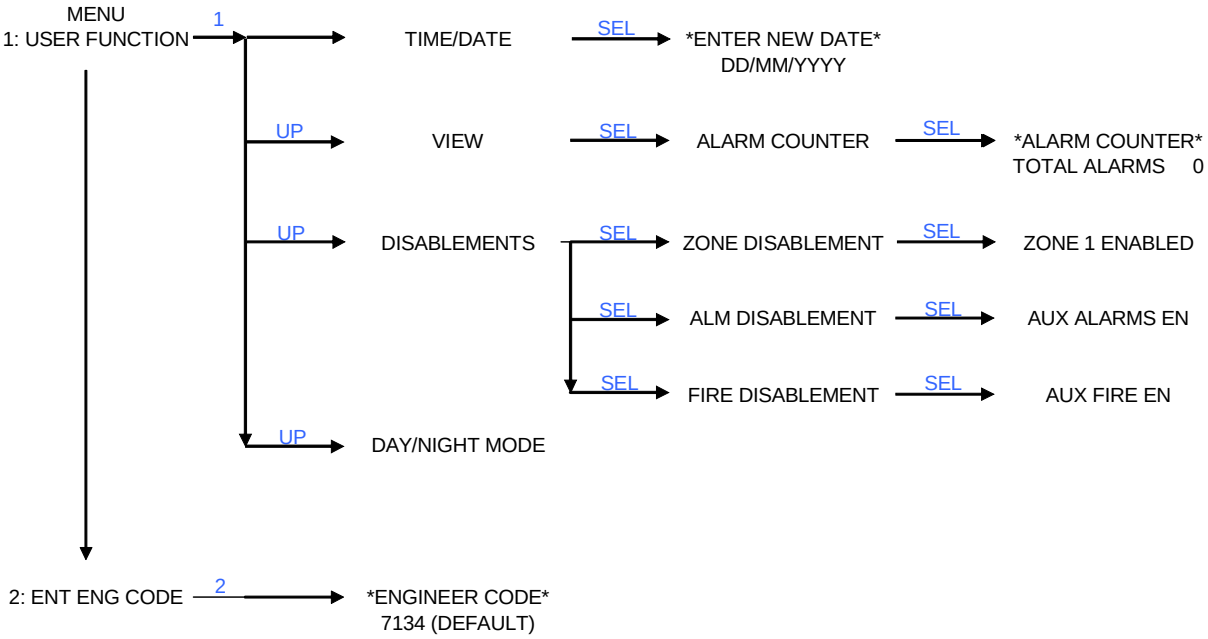

Figure 3: Access Level 2 Menu Structure

NOTE: Access Level 3 options are detailed in Chapter 3 – Installation & Commissioning.

CHAPTER 3

INSTALLATION AND COMMISSIONING

3.1 GENERAL

Installation of the fire detection and alarm system must comply with all applicable national and local regulations, standards and working practices.

Take care not to install cables in the proximity of high voltage cables or in areas likely to induce electrical interference. Junction boxes should be avoided, but if they have to be installed then they must clearly be labelled "Fire Alarm". Refer to Figure 4 for the External Wiring Diagram.

It is recommended that screened cables be used throughout the installation. All cables must be stripped in accordance with the manufacturer's guidelines. They must be secured to the enclosure using appropriate metal compression glands and metal locking nuts in conjunction with a metal shake proof washer to ensure that the cable metal sheath is bonded to the enclosure.

The cabling for the detection and sounder circuits is classed as low voltage and should be segregated from mains voltages. The pre-formed knockouts shown in Figure 5 must be carefully removed, where required, using a flat broad-bladed screwdriver and hammer. Use of excessive force should not be required and may damage the enclosure around the knockout. The surrounding paint must be carefully removed to permit metal to metal contact between the enclosure and cable gland.

The total current supplied by the panel power supply is 2.5A, which is shared by the auxiliary alarm devices, common fire and fault output devices and auxiliary 28V supply peripherals. Panel load calculations MUST not exceed 2.5A.

WARNING

The static handling procedures must be adhered to and extreme caution must be exercised when working inside the control panel due to the presence of mains voltage 230 V AC.

Static Sensitive Devices

A static sensitive device is any transistor or integrated circuit that may be permanently damaged due to electrostatic potentials and is generally encountered during routine handling, repair and transportation.

Static electricity is produced almost every time plastics or textiles are stroked or separated. Static charges are collected on adjacent conductors and are delivered in the form of sparks passing between conductors through insulating space or material. The perspiration layer on the human skin is a sufficient medium to store induced static charges and deliver them to any receptive conductor such as a component or printed circuit board.

All static sensitive devices are marked accordingly, but it is good engineering practice to treat all components and boards with the same degree of protection.

Static discharges can be reduced by following these guidelines:

1. Always use conductive or anti-static containers for transportation and storage.
2. Wear an earth wrist strap while handling, ensuring a good earth connection is maintained.
3. Never subject a static sensitive device to a sliding movement over any surface and avoid any direct contact with the pins.
4. Avoid placing sensitive devices on plastic or vinyl surfaces.
5. Minimise the handling of sensitive devices and PCBs.

3.2 INSTALLATION

SIRIUS II 2/4/8 conventional control panels are simple to install and commission if the following precautions are observed. Do not attempt to install or commission the control panel until this manual has been read and understood. It is assumed that the system, of which the control panel is a part, has been designed by a competent fire alarm system designer in accordance with EN 54-2:1997 and EN 54-4:1997 and any other local codes of practice that are applicable. The design drawings should clearly show the positions of ALL field devices and the control equipment.

CAUTION **FOLLOW ALL INSTRUCTIONS in this manual. These instructions must be followed to avoid damage to the control panel and associated equipment. Do not use a high voltage Megger when detector bases and peripherals have been fitted to the zone wiring.**

The panels, like all electronic equipment, may be adversely affected by extreme environmental conditions. The position chosen for the installation should therefore be clean and dry and not subjected to high levels of vibration or shock. The ambient temperatures should be in the range of 5ºC to 40ºC and the relative humidity below 95% (non-condensing).

These panels have been designed with electronic protection. Although no system is completely immune from lightning transients and interference, proper earthing will reduce susceptibility. The use of overhead or outside aerial wiring is not recommended due to the increased susceptibility to nearby lightning strikes. The panel must be mounted at least 2 metres away from pager systems.

The panel is normally surface mounted and should be installed within the building to be protected at a prominent location and at a height where it can be easily accessed during an emergency. The control panel should ideally be located in the entrance, foyer or hallway of the building at eye level. The panel should not be positioned where conditions may affect its performance. Areas prone to salt air, moisture, high humidity, physical abuse, and extreme temperatures should be avoided.

Remove the control panel from its packing and remove the front cover. Hold the panel to the wall at the desired mounting height and mark the position of the four screws holes. Drill holes to the required size and depth and secure the panel to the wall using suitable fixings such that adequate support is provided.

All cables should be screened in accordance with local fire regulations and should be glanded and brought into the cabinet through the top or bottom apertures provided in the back box assembly. Leave the protection plugs in any unused holes. Tails should be of sufficient length to connect to the relevant terminals. Great care should be taken to avoid damage to the PCB. Terminals accept 0.75 mm to 2.50 mm square stranded or solid conductor.

Do not over-tighten screw terminals. Over-tightening may damage threads, resulting in reduced terminal contact pressure and difficulty with cable removal.

To meet the EMC requirements of the European Directives, it is necessary to ensure that a screened or metal sheathed cable is used. It is also important to use only metal glands on the cable and to ensure that the screen or sheath is connected to the gland.

Before connecting the panel or field devices, the field wiring should be tested for insulation and continuity, earth faults and cross connections faults etc. Connect the end of line capacitor across the

last device in each of the zone wirings, end of line resistors across auxiliary alarm circuits and fire outputs. Connect all field devices. Once any field bases or devices are connected, DO NOT USE a high voltage Megger on the circuitry; low voltage multimeters may be used. Verify using a multimeter that all zone, auxiliary alarm circuit and fire output end of line capacitors and resistors can be seen. If a zone, auxiliary alarm circuit or the fire output is not used, then the appropriate end of line capacitor or resistor MUST be fitted in the panel field terminals.

3.3 CIRCUIT CONNECTION DETAILS

The panel provides field wiring connections (see Figure 4) whose functions are described below:

AUXILIARY 28V SUPPLY

The panel provides an auxiliary 28V DC supply output rated at 500 mA 28V, which may vary during a mains failed condition. This output is fused and fuse failure will be indicated as a panel fault. The panel will monitor this output for excessive current drain or for a ruptured fuse and will indicate a panel fault if one of the above conditions occurs. This supply allows for external peripherals to be powered from the panel. The auxiliary supply terminals are labelled AUX 28V, 28V and 0V.

FIRE OUTPUT [FIRE 1]

The panels provide a fire output rated at 500 mA 28V, which may vary during a mains failed condition. This output is current limited and overload protected by a smart FET circuit. The output is reverse polarity monitored for open and short circuit fault conditions. This output MUST be terminated with a 6K8 end of line resistor. When active by any zone fire alarm condition, it will provide 28V DC. Fire output 1 terminals are labelled FIRE 1, + -. This option is not available in the two zone version.

AUXILIARY FIRE OUTPUT [FIRE 2]

CAUTION **This fire output should not be used for any mandatory functions specified by EN54-2. The volt free relay contacts must not be used to directly switch any voltage which exceeds 30V DC.**

Changeover contacts are provided which operate on any zone fire alarm condition. Fire output 2 terminals are labelled FIRE 2, NO, P, NC.

AUXILIARY FAULT OUTPUT

CAUTION **This fault output should not be used for any mandatory functions specified by EN54-2. The volt free relay contacts must not be used to directly switch any voltage which exceeds 30V DC.**

Changeover contacts are provided which operate on any panel fault condition. This output is fail-safe and is active in a system fault, or if the system suffers failure of all power supplies. The fault output Is labelled FAULT, NO, P, NC.

CLASS CHANGE

The panel provides a monitored class change input which, when active, will operate all panel alarm devices only. When this input is not active the alarm devices will turn off, providing there are no standing alarm conditions. To use the input, a normally open switch contact needs to be connected aross the terminals labelled CLASS, + -.

ALARM CIRCUITS

The panel provides 2 alarm circuits, each rated at 500 mA 28V, which may vary during a mains failed condition. The alarm circuits are current limited and overload protected by smart FET circuits. The alarm circuits are reverse polarity monitored for short circuit and open circuit fault conditions. The alarm circuits MUST be terminated with a 6K8 end of line resistor. All devices fitted must be

polarised. Non-polarised sounders will show a sounder fault. The most common sounders are bells and electronic sounders. The same type of sounder must be used throughout the building and it must be distinctive so that the sound associated with a fire alarm is easily recognised. The voltage drop on each alarm circuit should be calculated to ensure that the minimum voltage at the end of each circuit exceeds the minimum required by each sounding device. The voltage at the end of the circuit is calculated by:

Minimum alarm voltage = 21V - (Alarm current in Amps x 2 x alarm circuit length in metres x cable resistance per core per metre).

Typical resistance per metre values are:

1.5 sq mm - 15m ohms per metre per core.
2.5 sq mm - 9m ohms per metre per core.

The alarm circuit terminals are labelled ALARM 1, + -, ALARM 2, + -.

ZONE CIRCUITS

The panel provides 2, 4 or 8 conventional zones of detection. Each zone circuit MUST be terminated with a 10µF capacitor. No active end of line terminator is required as detector head removal monitoring circuitry is built into the panel. A maximum of 32 smoke/heat detectors can be fitted on each zone circuit and there is no limit to the number of manual call points which can be used. Detector bases with integral continuity diodes must be used to ensure manual call points remain operational when a detector head is removed from its base. Manual call points with integral resistors must be used to prevent a short circuit fault occurring instead of a fire condition when activated. The zone circuits are current limited and overload protected by power resistors, which will allow a maximum of 80 mA 24V to be drawn by each circuit. The zone circuit terminals are labelled ZONE 1 - 8, + I -

NOTE To comply with the requirements of EN54-2, the following conditions must be met:

- **The total number of devices on a loop must not exceed 32.**
- **If output delays are enabled, manual call points should be connected to a different zone from the fire detectors.**
- **If coincidence detection is enabled, manual call points should be connected to a different zone from the fire detectors on the coincidence zones.**

REPEATER CIRCUIT

Up to 7 active repeaters and 7 passive repeaters can be interfaced to the panel over a maximum of 500 metres. The repeaters will mimic panel indications and user switches. Power to the repeater electronics can be derived from the panel auxiliary 28V supply or from an external power supply. Connection to and from repeater/s requires 2 core screened cable. The repeater terminals are labelled A, B and SCREEN. If the panel is to supply power to the repeater(s) then a 4 core screened cable is required. Terminations are labelled A, B, SCREEN, +28V and 0V (AUX 28V). If a repeater is to be connected to the panel, link LK3 needs to be made. This option is not available in the 2 zone version.

INPUT/OUTPUT OPTION CARDS

Input/output peripheral boards (refer to the appropriate data sheet) can be connected internally to the panel or externally over a maximum of 500 metres. Power to the input/output electronics can be derived from the panel auxiliary 28V supply or from an external power supply. Connection to and from input/output peripheral boards requires 2 core screened cable. Input/output card terminals are labelled IP/OP A, B. If the panel is to supply power to the input/output boards then 4 core screened cable is required. Terminations are labelled A, B, SCREEN, +28V and 0V (AUX 28V).

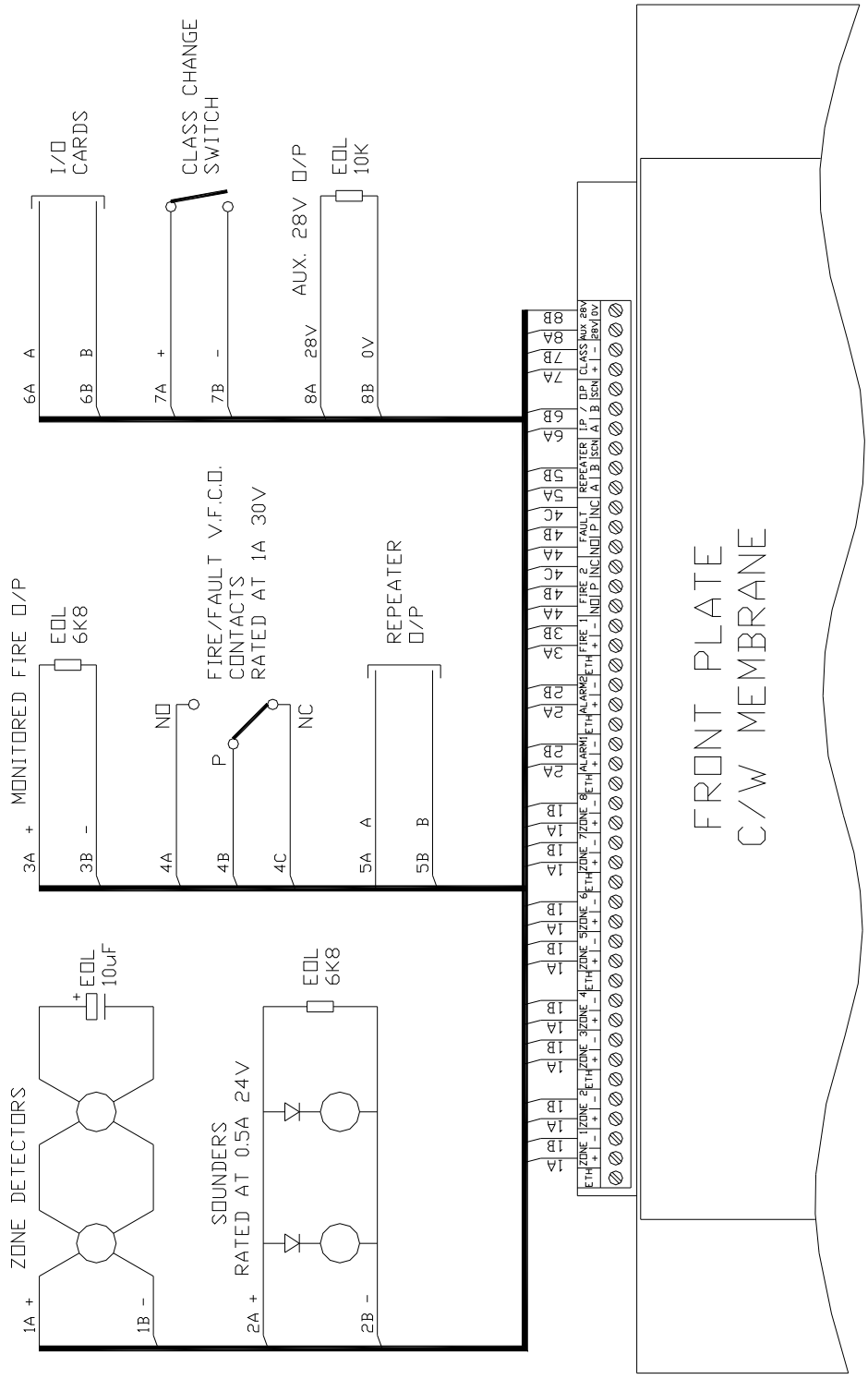

Figure 4: External Connections

3.4 COMMISSIONING

CAUTION **The control panel may be damaged by removing and/or inserting cards, modules, or interconnecting cables while the unit is energised. Do not attempt to install, service or operate this panel until this manual is read and understood.**

It is recommended that the control panel is powered-up and tested before connecting the field devices as follows: Temporarily connect a 10µF capacitor (supplied) into each pair of zone terminals and a 6K8 resistor to each pair of auxiliary alarm terminals and the fire output terminals. DO NOT connect the batteries at this stage.

POWERING THE PANEL

WARNING **The panel MUST be earthed before connecting the mains input supply wiring.**

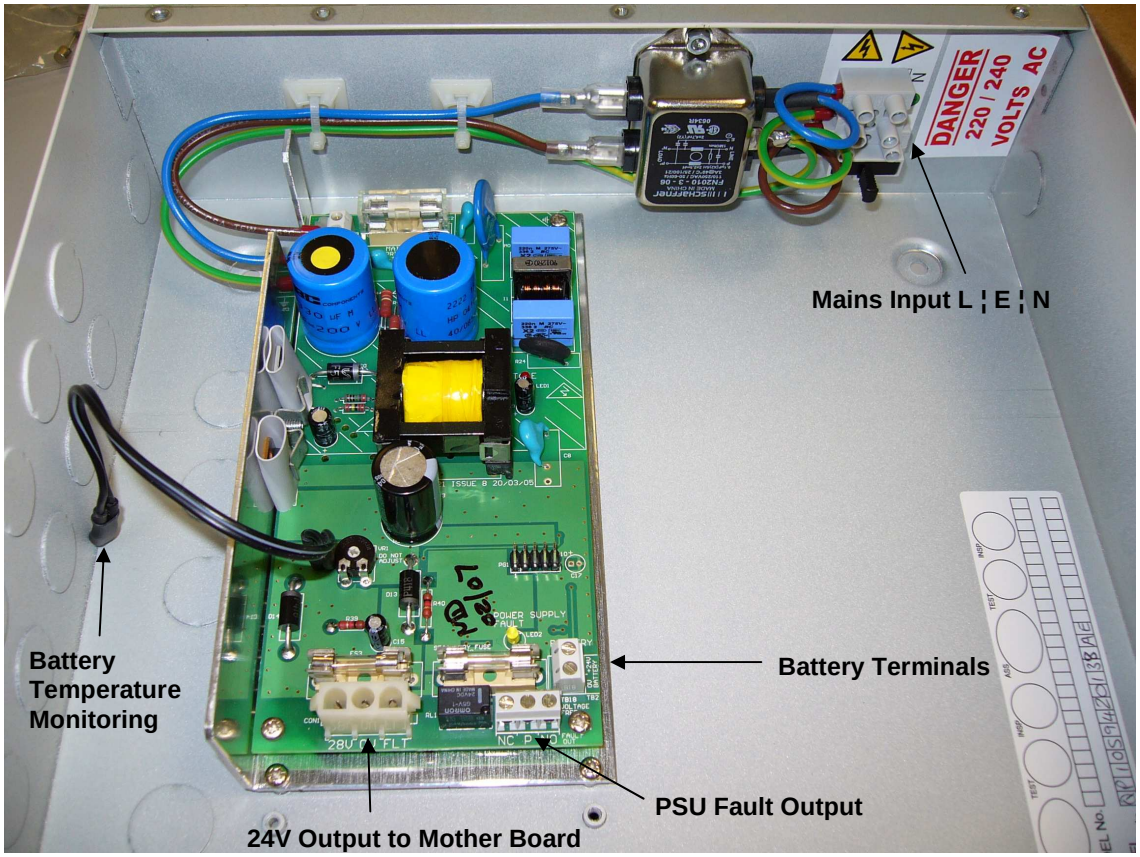

Figure 5: Electrical Connections

Connect the mains input supply wiring (see Figure 5). Connect the two battery leads (supplied) into the positive (red lead) and negative (black lead) panel battery terminals. Place the two batteries on the lower shelf of the panel back box and secure using the “Velcro” hook & loop fastener provided. Switch on the mains supply and wait 10 seconds:

- The **POWER ON** light comes on
- The panel buzzer sounds intermittently 1 second every 3 seconds
- The **POWER FAULT** light flashes
- The **GENERAL FAULT** light flashes

Turn the mains supply off.

Using the short lead supplied, connect the positive terminal of one battery to the negative terminal of the other battery. Connect the red battery lead to the free + battery terminal. Turn the mains on and connect the black battery lead to the free - battery terminal. After a few seconds, with the batteries connected, ALL lights should be off with the exception of the **POWER ON** light. If any faults or abnormal conditions are indicated, investigate and rectify before connecting the external wiring.

CONNECTING EXTERNAL WIRING

If the panel has powered-up correctly, SWITCH OFF the mains and DISCONNECT one of the battery leads and then connect the external field wiring as follows:

Remove the 10µF end of line capacitor from the zone terminals. Connect the external zone wiring (observing correct polarity) and fit the EOL capacitor to the last device on the zone.

Remove the 6K8 end of line resistor from the alarm circuit terminals. Connect the external sounder wiring (observing correct polarity) and fit the EOL resistor to the last device on the sounder circuit.

CAUTION The Sounders must be polarized and suppressed. DO NOT exceed the total alarm load (see Technical Data).

Remove the 6K8 end of line resistor from the fire output terminals. Connect the external fire output wiring (observing correct polarity) and fit the EOL resistor to the last device on the fire output circuit.

TESTING

When all panel circuits have been connected, switch on the mains supply and then connect the disconnected battery lead. Rectify any faults indicated by the control panel. Ensure a fault is shown when ANY zone, alarm circuit or fire output circuit is open or short-circuited, or when a detector is removed from its base. Check that all detectors and manual call points raise an alarm, all auxiliary fire alarm devices are operating correctly and all fire output devices are operating correctly.

NOTE To silence and reset the system after a panel alarm condition has been raised, Panel Access must be enabled. Check that manual call points still raise an alarm condition when any detector head is removed from the same zone.

Switch off the mains supply:

- The **POWER ON** light flashes
- The panel buzzer sounds intermittently 1 second every 10 seconds
- The **POWER FAULT** light flashes
- The **GENERAL FAULT** light flashes

Turn on the mains. All lights should be off with the exception of the **POWER ON** light.

ACCESS LEVEL 3 (ENGINEER MODE) is indicated by the **ACCESS** light flashing 1 second on, 1 second off. When in engineer mode all panel engineer functions can be accessed and this allows the engineer to enter several panel functions for panel configuration and test. To enter engineer mode, in Access Level 2:

- Press **MENU** switch
- Press switch **2**
- Enter the engineer code 7134
- Press switch **2** and select function

To exit engineer mode at any time press the **EXIT** switch, or do not operate any other switch for 30 seconds.

ZONE ONE MAN TEST

The ZONE ONE MAN TEST function allows the engineer to test zone FIRE responses from one or more zones remotely from the panel. An engineer can put the zone into test and remotely trigger a detector or manual call point into fire. When in fire all panel alarm devices operate but the fire outputs do not operate. After 3 seconds the alarms turn off and the panel resets automatically. When the fire alarm condition is cleared the alarms sound twice, telling the engineer that the tested zone is now clear.

Faults from zones in test will be ignored.

In the quiescent state a zone in test is indicated by the **ZONE** fault light flashing 0.5 second on, 0.5 second off and the **GENERAL TEST** light on.

ZONE CIRCUIT TYPE

The ZONE CIRCUIT TYPE function allows the engineer to configure any zone to be latching or non-latching fire. This function allows the panel to interface to other fire panels or equipment where only a fire indication is required.

COINCIDENCE ZONES

The COINCIDENCE ZONES function allows the engineer to configure 2 zones as coincidence zones, which requires both zone alarm conditions to be active before the panel alarms and fire outputs are operated. Zone pairs which can be configured are:

- ZONE 1 AND ZONE 2
- ZONE 3 AND ZONE 4
- ZONE 5 AND ZONE 6
- ZONE 7 AND ZONE 8

DAY DELAY ZONES

The DAY DELAY ZONES function is used to configure the zone/s in alarm which delay the alarm and fire outputs. Zone/s not configured for day delay automatically operate the alarm circuits and fire outputs when in alarm.

DAY TIME DELAY

The DAY TIME DELAY function is used to set the time in seconds for T1 and T2 day time timers. T1 time is set for investigating if the zone alarm is true or false. T2 time is set as a time delay for operation of the alarms circuits and fire outputs. When a delayed zone is in alarm, T1 timer starts and the **OUTPUT DELAYS** light flashes 1 second on, 1 second off. If no switch is pressed, after T1 delay the alarm circuits and fire outputs operate. To override T1 delay, operation of the **SILENCE RESOUND ALARMS** switch automatically operates the auxiliary alarms and fire outputs. If during T1 delay the **SILENCE BUZZER** switch is operated, T1 timer stops and T2 timer starts. If the alarm is investigated and is false, operation of the silence/resound switch cancels T2 timer and the alarm circuits and fire outputs do not operate. If the alarm is investigated and is true, after T2 time expires the alarm circuits and fire outputs operate.

NIGHT MODE TIME

The NIGHT MODE TIME function is used to set the time where the panel switches from Day mode to Night mode. In night mode no delays are active even if enabled, any alarm event will operate the alarm circuits and fire outputs. To switch from night to day mode of operation press the **ENTER** switch.

PANEL ALARM MODES

The PANEL ALARM MODES function allows the engineer to configure the panel alarm circuits. When the panel is in an alarm state, the alarm circuits can either be steady on or sound intermittently. There are 3 alarm modes available:

ALARM MODE 1	Alarms all steady on
ALARM MODE 2	Alarms all sounding intermittently 3 second on 3 second off
ALARM MODE 3	Alarms all sounding intermittently 3 second on 3 second off with single zone fire condition and all steady on with more than one zone fire condition

DETECTOR LIGHT

The DETECTOR LIGHT function allows the engineer to select if detector alarm lights are steady or flashing in alarm. The flash rate is set to 1/4 second on and 1 second off.

EDIT ACCESS CODE

The EDIT ACCESS CODE function allows the engineer to select a new 4 digit panel access code (default 7179).

SYSTEM FAULT CLEAR

The SYSTEM FAULT CLEAR function allows the engineer to clear any standing system fault conditions. If the **SYSTEM FAULT** light and **GENERAL FAULT** light flash 1 second on 1 second off, a system fault condition has occurred. A system fault could occur in a brown-out condition (microprocessor voltage supply low), system software crash or out of step, software checksum error or system hardware fault. These fault conditions are indicated even after a panel reset. To clear these fault conditions use SYSTEM FAULT CLEAR through the engineer menu.

PANEL DEFAULTS

The PANEL DEFAULTS menu must only be used by a competent engineer because all programmed data is lost when used. The sequence of key codes for panel defaults has been extended for this purpose.

This function allows the engineer to configure the panel to all its factory default settings:

- All zones will be circuit type latching fire
- No zones will be coincidence zones
- No zones will be delayed in an alarm condition
- Day time delay T1 and T2 will default to 1 second
- Night mode time defaults to 18:00:00
- Alarm mode 1 (all alarms steady on in alarm)
- Detector alarm lights steady in the event of the detector reaching an alarm state
- User access code defaults to 7179

When the panel is commissioned, the above defaults are configured into the panel.

CHAPTER 4

MAINTENANCE

4.1 GENERAL

Maintenance of equipment external to the control panel will be detailed in the appropriate manufacturer's literature.

The back-up batteries are maintenance free but should be replaced every 4 years.

CAUTION **Risk of explosion if battery is replaced by an incorrect type. Dispose of batteries in accordance with all local regulations and the manufacturer's instructions.**

All printed circuit boards are self-monitoring and therefore should only be replaced as required.

4.2 ROUTINE MAINTENANCE

Routine maintenance should be carried out in accordance with all applicable national and local regulations, standards and working practices.

The fire alarm system should be tested on a weekly basis and a note made in the system log book. The operation of manual call points and detectors should be carried out on a rotating basis, so that all units are checked at least once over a period of 3 months.

To operate a manual call point use the test key provided. To operate a detector use a smoke generator. Check the operation of auxiliary items such as door closures etc.

All performance checks undertaken should be recorded in a system log book.

As a minimum, the following performance checks must be undertaken on each maintenance visit.

WARNING **The static handling procedures must be adhered to and extreme caution must be exercised when working inside the control panel due to the presence of mains voltage 230 V AC.**

- Carry out checks described in section 3.4 Commissioning.
- Remove dust and dirt from the panel exterior using a soft brush or a lint cloth. A solvent, which is harmless to the finishes of metal and plastic, may be applied to more stubborn stains.
- Examine the exterior of the enclosure for any signs of damage or loose cable glands and rectify any faults found.
- Remove any dust or dirt from the interior of the control panel using a soft brush or a vacuum cleaner,
- Examine the printed circuit boards for signs of over-heating or damaged tracks. Replace any defective items.
- Examine the battery terminals for security and for signs of corrosion. Replace or repair as required.

CHAPTER 5

SPECIFICATIONS AND DATA

5.1 WIRING SPECIFICATION

All system wiring should be screened and installed to meet local regulations.

CABLE TYPES AND LIMITATIONS

To shield the panel from outside interference and ensure compliance with electromagnetic regulations, we recommend screened cables are used throughout the installation.

MAINS WIRING

The requirements for the mains supply to the fire alarm panel is fixed wiring, using three core cable (no less than 0.75 sq mm and no more than 2.5 sq mm) or a suitable three conductor system, fed from an isolating switch fuse spur, fused at 3A.

ZONE WIRING

Cable 1.0 mm CSA	Max length 600 metres
Cable 1.5 mm CSA	Max length 1 kilometre

ALARM WIRING

Cable 1.0 mm CSA	Max length 300 metres
Cable 1.5 mm CSA	Max length 450 metres

FIRE OUTPUT WIRING

Cable 1.0 mm CSA	Max length 300 metres
Cable 1.5 mm CSA	Max length 450 metres

5.2 APPROVED DETECTOR TYPES

Sirius II has been tested with the following detectors and call points:

- Apollo Series 60 and Series 65
- Hochiki CDX range
- Nittan Sensortec
- Nittan Evolution
- KAC manual call point

5.3 TECHNICAL SPECIFICATIONS

Size:	H: 280 mm W: 350 mm D: 90 mm
Weight excluding batteries	2 kg
Operating temperature	-5 deg C to 40 deg C
Operating humidity	5% to 95%

Power Supply

Mains supply voltage	230V AC +/- 10% 50/60 Hz
Internal power supply	28V DC Nominal
Output Voltage range	19V – 30V
Ripple Voltage	500 mV 10 kHz bandwidth
Total output current limited to	2.5 A
Supply and battery charger monitored	YES
Batteries monitored	YES
Max battery size and Type	2 Yuasa NP7-12 12V 7 Ah SLA connected in series*
Mains Fuse	240V 3.15A (T) anti-surge
Battery fuse	2.5 A
Auxiliary 28V supply fuse	500 mA (T) anti-surge
Quiescent current (mains off)	30 mA 8 zone control panel
Alarm current (mains off)	90 mA 8 zone control panel
Maximum current to be drawn from batteries when the mains is not present	2 A
Maximum charger output	500 mA

*Use of another battery type may invalidate the EN54 approval.

Detector Circuits

Number of circuits	2, 4, or 8
End of line capacitor value	10uF 35V (or higher) electrolytic
Max cable length per circuit	1 km
Monitored for open and short circuit	YES
Monitored for detector removal	YES
Detector circuit Voltage	24V DC max, 18V DC min
Maximum line resistance (each core)	22 Ω
Maximum cable capacitance	1 µF
Call point resistor value	470 Ω to 680 Ω
Max number detectors per zone	32 (see note on page 13)
Max number of call points per zone	No limit (see note on page 13)

Sounder Circuits

Number of circuits	2
End of line resistor value	6K8 5% 0.25W
Monitored for open and short circuit	YES
Alarm sounder circuit voltage	24V DC max, 21V DC min

Maximum total sounder load	Up to 500 mA each circuit (limit to 1A total)
Maximum cable length per circuit	450 metres
Maximum line resistance	22 Ω
Maximum number of bells @ 25 mA each	40 (must be polarised and suppressed)
Maximum number of sounders @ 20 mA each	50 (must be polarised)

Fire Output 1

Number of circuits	1
End of line resistor value	6K8 5% 0.25 W
Monitored for open and short circuit	YES
Fire output 1 circuit voltage	24V DC max, 21V minimum
Maximum circuit load	Up to 500 mA
Max cable length per circuit	450 metres
Maximum line resistance (each core)	22 Ω
Maximum cable capacitance	1 µF

Auxiliary Output

Auxiliary fire 2 output relay	Volt free SPST 30V 1A normally de-energised
Auxiliary fault output relay	Volt free SPST 30V 1A normally energised
Auxiliary 28V power output	500 mA (T) anti-surge

Auxiliary Input

Number of circuits	1 – CLASS CHANGE
Max number switches	No limit

Connection Block

Largest conductor size	2.5 sq mm
Smallest conductor size	0.75 sq mm

5.4 BATTERY REPLACEMENT

The batteries should be replaced every four years.

CAUTION: RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

The EN54 approval testing was carried out using Yuasa NP7-12 batteries.
Use of another battery type may invalidate the EN54 approval.